

Date: October 29, 2003

TO: Region Engineers
Region Delivery Engineers
TSC Managers
Resident/Project Engineers
Region Construction Engineers

FROM: Larry E. Tibbits
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SUBJECT: Bureau of Highway Instructional Memorandum 2003-14
Excerpts From Surface Preparation and Coating of Concrete (SSPC) Publication
98-05 to be Used With the Special Provision for Concrete Surface Coatings

The Special Provision for Concrete Surface Coatings specifies requirements for the use of acrylic coatings (paints) at various locations on concrete structures. The use of concrete coatings has grown rapidly and, along with architectural detailing, has captured the attention of the public. The Society for Protective Coatings has published a guide (Surface Preparation and Coating of Concrete, Publication 98-05) that is useful for the inspector to help ensure quality work. The following paraphrased excerpts (with added comments) focus on important typical surface preparation and application issues.

Section 3: Inspection Procedures Prior to Surface Preparation

- 3.1 Inspect the concrete prior to surface preparation to determine the condition of the concrete and the appropriate method(s) for surface preparation to meet the requirements of the coating system to be applied.

Comment: Water/steam cleaning removes primarily water soluble contaminants. Aged concrete with contaminants such as hardened curing compound residue may require light abrasive blasting to completely remove it. Since many curing compounds contain wax, even well adhered residue must be removed to ensure good bond. The contractor should be prepared by having both the necessary equipment available and additional time or crew allotted.

- 3.2 Visually inspect all surfaces for concrete defects, contamination, and excess moisture.

Comment: Contaminants remaining on the concrete surface or excess moisture within or on the concrete will cause bond loss (peeling) of the paint. This problem will develop quickly, but probably not before the contractor has left the job site.

- 3.3 Concrete curing includes maintaining sufficient moisture and temperatures for a minimum amount of time.

Comment: Curing for the specified time period is essential to obtain durable concrete. Likewise, the 28 day waiting period is essential in obtaining a quality coating job and therefore must be rigorously enforced. The waiting period allows the concrete to gain surface strength, develop fine shrinkage cracks that can be bridged by the coating, and it allows moisture to dissipate through hydration and evaporation. This waiting period can play havoc with construction schedules, so it is beneficial to address this issue at the pre-construction meeting.

Section 4: Surface Preparation

- 4.1.3 Surface preparation should expose voids and defects at or near the concrete surface.

Comment: Paint magnifies defects. The extent of repair expected from the contractor should be discussed at the pre-construction meeting. For example, a bridge barrier railing may need fewer surface defect repairs than an architectural rope detail.

- 4.1.4 Remove all unsound concrete.

Proper preparation should produce a slightly textured surface profile while removing all contamination and laitance. Be careful when using light abrasive blasting on new construction so that excessive concrete material is not removed.

Section 5: Inspection and Classification of Prepared Concrete Surfaces

- 5.2.1 Coating adhesion can be evaluated on a test patch if compatibility between the prepared surface and coating is in question.

Comment: A simple scratch or knife adhesion test can give an indication of suitable adhesion. Pull-off testing equipment is also available. Slow and thorough cleaning in the preparation phase should make this testing unnecessary.

- 5.4.2 Surface cleanliness can be checked by lightly rubbing with a dark cloth or pressing a translucent adhesive tape onto the concrete surface. An acceptable level of residual dust can be agreed upon by the engineer and contractor.

Comment: The presence of hydrophobic contaminants can be detected by a simple water drop test. Absence of contaminants would be evidenced by rapid absorption of the water into the concrete surface.

Summary

Proper surface preparation and application practices will improve the long term performance of the concrete coating.

Chief Operations Officer

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